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ABSTRACT

This study compared the culture-dependent attitudes of Finnish teachers (N=147) and American teachers (N=160) toward gifted education. The teachers from both countries represented preservice teachers, regular classroom teachers, and teachers of the gifted. Emphasis was on the relationship of attitude to culture from which the teacher came. The relationship of attitude to demographic variables such as age, gender, having a gifted family member, and giftedness of respondents were also examined. The instrument used was the Attitude Scale toward Gifted Education developed by Gagne and Nadeau (1985). A new method to identify cross-cultural predictors of attitude based on Bayesian analysis was also applied. The study found that Finnish teachers were more concerned about the possible negative social and affective effects of special classes or other services for the gifted outside the regular classroom. In addition, the new statistical methodology used was able to predict culture-dependent attitudes with 87.6 percent accuracy. Contains 14 references. (DB)

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Cross-cultural predictors of teachers' attitudes toward gifted education

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Running head: CROSS-CULTURAL PREDICTORS OF TEACHERS' ATTITUDES TOWARD GIFTED EDUCATION

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Objectives

The purpose of this study was to investigate the culture-dependent attitudes of teachers toward gifted education. The sample consisted of Finnish teachers (N=147) and American teachers (N=160). The teachers from both countries represented pre-service teachers, regular classroom teachers, and teachers of the gifted. The instrument used was the attitude scale toward gifted education developed by Gagne and Nadeau (1985). The relationship of attitude to demographic variables, such as age, gender, having a gifted family member and giftedness of respondents were examined. However, a special emphasis in this study was on the relationship of attitude to the culture from which the teacher came. The primary purpose of this study was to identify cross-cultural predictors of teachers' attitudes toward gifted education. In addition, a new method to find these predictors was introduced as an alternative methodological approach in prediction. Finally, the results of this study were compared to an earlier study using more traditional quantitative methods (Tirri, Tallent-Runnels & Adams 1998).

Perspective

In prior studies few variables have consistently emerged as substantial explanatory factors for attitudes toward and perceptions of gifted children and services for the gifted. Begin and Gagne (1994), in their analysis and summary of results of 30 studies with almost 50 variables, concluded that only three potentially valid predictors emerged. These were contact with gifted children, sex of the respondents, and teachers vs. parents.

However, methodological problems and much variation among studies prompted them to make several recommendations for future studies. Results from several other studies (e.g., Copenhaver & McIntyre 1992; Jones & Southern 1992; Morris 1987) demonstrated that those with more knowledge about gifted children hold more favorable attitudes toward them. Another factor that emerged from many studies is experience working with gifted children. In general, teachers who have worked with them have more positive attitudes toward them than teachers who have no experience teaching gifted children (Begin & Gagne 1994; Copenhaver & McIntyre 1992; Dettmer 1985; Townsend & Patrick 1993).

Some of the studies concerning attitude have been conducted in countries other than the United States (e.g., Awanbor 1991; Busse, Dahme, Wagner & Wieczerkowski 1986; Gagne 1983; Tirri & Uusikylä 1994; Ojanen & Freeman 1994, Tirri et al. 1998). Only three of these studies (Busse et al. 1986, Ojanen & Freeman 1994; and Tirri et al. 1998) were cross-cultural. The first one (Busse et al. 1986) compared samples from Germany and from the United States. This study examined teacher perceptions of characteristics of highly gifted students. There were some differences, with Germans focusing more on creativity and Americans focusing on intelligence as indicative of giftedness. The other cross-cultural study (Ojanen & Freeman 1994) examined the attitudes and experiences of headteachers, class-teachers, and highly-able students toward the education of the highly able in Finland and Britain. According to this study the British headteachers were more concerned than the Finns about the potential problems of their highly able students. The Finnish teachers preferred to keep highly able students within normal classroom routine

and with other children, in order to promote their social skills, and also to have them as good examples for the less talented students. They were afraid of the isolation which might occur should talented children be placed in special schools, something they all deplored. Instead, they preferred special arrangements within ordinary, mixed-ability classes and schools (Ojanen & Freeman 1994).

In the most recent cross-cultural study on teacher attitudes toward gifted education the Finnish teachers were shown to be more concerned about the negative side effects of special classes and other special arrangements for the gifted outside the regular classroom than their American colleagues (Tirri et al. 1998). In this paper our aim is to further explore those attitudes toward gifted education that are strongly culture-dependant.

Methods

Participants were from Finland (N=147) and the United States (N=160). These were regular classroom teachers, pre-service teachers, and gifted program teachers (see Table 1.) All groups included elementary and secondary teachers, several grade levels, several subject areas, and varying years of experience. The instrument utilized was Form A of the Attitudes Toward Giftedness scale developed by Gagne and Nadeau (1985). The scale contains 60 statements; the questionnaire uses a 5-point Likert-type scale (from Strongly agree to Strongly disagree). Procedures included administration of the instrument within college classes for preservice teachers. Other teachers were asked by school personnel to participate. All participation was anonymous and voluntary. Attached to the instrument

was a demographics sheet asking age, gender, subjects taught, grad level taught, if they were gifted, or if they had a gifted family member.

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insert Table 1 approximately here

Findings

Results of the First Factor Analyses

From the theoretical setting of the Gagne and Nadeau study (1985) we have two essential pieces of information. The first one is that the expected number of factors is five using maximum-likelihood factor analysis. After performing factor analysis in the same manner as Gagne and Nadeau (1985) we found the five factor solution to be unjustified for our sample. The five factor solution explained only 33% of the total variance, and the criteria of eigenvalues greater than 1 was not met with that number of factors. The second piece of information is that the existence of correlation between the latent variables influences our choice of rotation method for factor analysis. The use of varimax (orthogonal) method for rotation in the Gagne and Nadeau study (1985) has become a de facto standard in educational research. However, in many cases the use of oblique rotations could have produced significantly different results (Tirri 1993). This is not surprising if one realizes that in many cases the underlying dimensions are clearly correlated already because of the theoretical framework, and thus an orthogonal rotation will be able to find only artifacts; i.e., approximations to the true structures. In our case

the latent variables representing the various dimensions of attitudes toward gifted education are naturally all highly correlated, and thus to achieve the simplest interpretation structure the use of oblimin rotation (Harman, 1976, 334-341) is more appropriate than varimax solutions. Following Harman's recommendation (Harman 1976) we used direct oblimin rotation in our factor analysis.

Any exploratory analysis has to be preceded by observations relating to the appropriateness of its use. Consequently we have tested both the hypothesis that the correlation matrices in question are identity matrices (Bartlett's test of sphericity) and the relationships of observed correlation coefficients to the magnitudes of the partial correlation coefficients(the Kaiser-Meyer-Olkin measure). In both of these respects the correlation matrices seem to satisfy the requirements for factor analysis well. The Bartlett sphericity test value was 5450.6 with 0 significance level, and the KMO value was .78, a value which Kaiser (1974) characterizes as meritorious.

One of the central issues in exploratory factor analysis is the question of deciding the right number of factors; i.e., when to stop factoring. There exist formal tests such as Bartlett's test based on chi-square approximations (Bartlett 1950), but these tests only provide an upper bound for the number of factors that can be of practical significance. A statistical test of significance only indicates the existence of factors, but not necessarily ones that are identifiable in the semantic framework studied. In our case, the commonly used guideline of latent root curve criterion; i.e., the "scree" of Cattell (Cattell, 1978, 76-91) clearly underestimates the number of factors. Thus as a numeric guideline to choose the proper number of factors we have used the "variance greater than 1.0" rule (Kaiser,

1970, 401-415), which is the default in SPSS software. In general, the most important factor influencing the choices has been the simplicity of interpretation.

The chosen factor solution

The chosen 18-factor solution explained 62.3% of the total variance. The detailed description of the chosen factor solution is provided in (Tirri et al. 1998). Table 2 lists all 18 factors along with item numbers for each factor. Many of the factors in this solution are closely related. However, there are no justifiable criteria to force the number of factors to be smaller. This relationship is accounted for by using oblique rotation which allows the factors to correlate. It is also a property of oblique rotations that variables can get high loadings on several factors. You will notice that this did occur with our 18-factor solution.

MANOVA results for the demographic variables did not demonstrate any significant differences. However, the results with country (Finland, USA) and type of teacher (pre-service, regular classroom, gifted program) did suggest differences between cultures and among teacher types. For the 18 factors there was a significant effect for country [Wilks Lambda = .60, f (18,283) = 10.52, p = .0001]. Scores for 12 of the 18 factors demonstrated significant differences between teachers in Finland and those in the United States. These results of the univariate analyses are reported in details along with means and standard deviations for each in our earlier paper (Tirri et. al. 1998) There were no differences for factors 3, 5, 8, 11, 16 and 17.

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insert Table 2 approximately here

Discriminate Analysis Results

The descriptive statistics with means and standard deviations, an exploratory factor analysis and a Multivariate Analysis of Variance (MANOVA) are reported in details in our earlier paper (Tirri et al. 1998). The factor scores gained in the factor analysis were used to perform a discriminate analysis. This analysis helped to determine which of the significant differences or factors might be those which discriminate best between countries. Every 18 factor score represented the high loading variables of each factor. The classification results showed that country was a very good prediction of teachers' differences in their attitudes toward gifted education. The discriminate analysis classified 86.6% of original grouped cases correctly. The statistical indicators, such as Wilks's Lambda (Klecka 1981, 36-39), F-value and statistical significance of the group means showed that some of the factors discriminated the teachers from two countries better than the others (see Table 3.). The teachers differed most from each other in their attitudes toward "Special services for gifted" (factor 10). The American teachers were more favorable toward special services for gifted, and they acknowledged the differences between the children in schools. The Finnish teachers were more oriented toward "the same education for everybody" and they were not as ready as American teachers to label some of the children gifted. This result is very understandable, because gifted education has a longer tradition in the United States than in Finland. Only during the last 10 years

has Finland officially acknowledged the need to arrange special services for gifted and talented students (Tirri 1997).

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insert Table 3 approximately here

The second best discriminating factor between American and Finnish teachers was factor 7 "Special classes for gifted". The American teachers advocated special classes in efforts to meet the needs of gifted children. The Finnish teachers were more reserved in their attitudes toward special classes. The same attitude was found in the other study with Finnish teachers, in which the elementary teachers preferred differentiated methods within the regular classroom (Tirri & Uusikylä 1994).

"Consequences of gifted education" (factor 13) were shown to be of more concern to Finnish teachers than to their American colleagues. The Finnish teachers were more concerned about the negative consequences of special programs for gifted, and they were worried about the future effects of such arrangements. The American teachers, on the other hand, viewed the consequences of gifted education in a more positive light than their Finnish colleagues. However, in factor 2 "Special needs of Gifted", the Finnish teachers surprisingly acknowledged the special needs of gifted children more than the American teachers. The same trend was present with the issues dealing with "special programs for gifted" (factor 12). The Finnish teachers were more concerned about the dangers of gifted children becoming dropouts of tomorrow unless special programs are arranged for them. The American teachers were not that worried about the lack of special

programs for the gifted. This difference can be explained by the current debate in Finland over the importance of arranging special programs for gifted children. In the United States these programs have been available longer, and teachers might not be as worried about the lack of them as their Finnish colleagues.

The issues related to "Equality of opportunities" (factor 9) showed significant differences between the American and the Finnish teachers. In the Finnish society, the school system has traditionally looked most after the weakest members of the society, for example, the children with learning disabilities and behavioral problems. In this light it is natural that the Finnish teachers were more concerned about issues concerning equality in gifted education than their American colleagues. The same tendency for Finnish teachers to emphasize the needs of children with difficulties was seen in the differences of American and Finnish teachers toward issues on "Priorities in special education" (factor 15). The Finnish teachers were more in favor of special help for children with difficulties than for gifted children.

According to Van Tassell-Baska (1992) acceleration is the key issue that tests acceptance toward gifted education. In our data, American teachers favored acceleration options (factor 5) more than the Finnish teachers. This tendency was natural because of the lack of acceleration options we have had in Finland. However, today it is possible for the parents to decide if they want their child to start school in the age of 6 (earlier the age was 7).

The results of the Bayesian predictive discriminant analysis

In order to investigate the discriminating factors (variables) further, in this paper we have performed another classification analysis of teachers' attitudes with respect to predicting their country of origin. We have adopted a new BAYDA classification method based on Bayesian analysis (Silander & Tirri 1999). We will show that the Bayesian based method can predict the country of the teacher 87.6% of cases correctly. Our purpose is to find out more evidence for identifying those teacher attitudes that are the most culture-dependant. Since this Bayesian analysis is not as "standard" methodology as linear discriminant analysis, in addition to the analysis results we also provide some details of the analysis performed.

The task in the Bayesian analysis was to build a model for classifying the data items according to the class variable "COUNTRY" using approximately a half of the instrument variables as predictor variables. The chosen predictors were the same as in the linear discriminant analysis, i.e., the variables dealt mostly with acceleration and grouping that Van Tassell-Baska (1992) has identified as key issues testing acceptance toward gifted education. The analysis showed that using the selected predictor variables one can estimate a 87.6 % success rate in the classifications. In BAYDA this estimation is based on the following external leave-one-out crossvalidation procedure: Using the selected predictor variables, BAYDA built 307 models. Each of these models were constructed using 306 data items from the data set and each model was then used to classify the data item *not used* in the model's construction. Since 269 out of 307 models succeeded in classifying the one unseen data item correctly, one may assume that this

would happen in the future as well. However, simply stating the classification performance of 87.6% is not meaningful as such. It has to be compared with the performance obtainable by a "default" classification procedure that always guesses the class of the data item to be the class of the majority (class "1" in this case). In our sample this simple method would yield the performance rate of 52.1%.

The overall result of 87.6% is just an average performance rate. Suppose our model classifies a certain data item to belong to the class "1". Does this mean that there is an 87.6% chance that this classification is right? Not necessarily, since some classifications may be correct more often than the others. In this case, while doing the crossvalidation, we predicted 164 times that data item should belong to the class "1" and 87.2% of these classifications were correct. So we estimate that if the system predicts previously unseen data item to belong to the class "1", there is an 87.2% chance that this prediction is right. The reliability of this estimate can be rated by stating the fact that the estimate is based on classifying 164 items (53% of the sample) as members of the class "1".

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insert Figure 4 approximately here

In the classification process the automatic search tried to find the best set of variables that predict the country. This procedure is akin to the stepwise selection procedure in the discriminant analysis. In Figure 4 can be seen the variable subsets found by the automatic search. The variables that were not selected for any subset are not good ones to predict cross-cultural attitudes in our data. These variables are presented in Figure 5.

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insert Figure 5 approximately here

However, as we observe, some of the variables were selected for every subset. In some sense this provides confidence to the credibility of these particular variables, as frequent presence in well-predicting subsets supports a particular type of invariance that can be interpreted as an indicator for importance. Figure 6 illustrates these invariant predictors of teacher attitudes.

If we compare the variables that were selected for every subset by the BAYDA-classification with the high loading variables in the factor analysis, we can identify some similarities in the analysis. The high loading variables in factor 15 "Priorities in special education" included variable 8 "Children with difficulties have the most need of special educational services" and variable 44 "We have a greater moral responsibility to give special help to children with difficulties than to gifted children". In the discriminant analysis factor 15 was shown to be one of the most discriminating factor between American and Finnish teachers. Both these variables with high loadings on factor 15 were also selected as the most predicting ones for the country of the teacher according to the Bayesian classification.

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insert Figure 6 approximately here

The variable 60 "There are no gifted children in our school" with high loading in factor 10 "Special services for gifted" was one of the most predicting variable also in the Bayesian classification. Factor 7 "Special classes for the gifted" was the second best discriminating factor between American and Finnish teachers. Two of these three high loading variables in this factor were also among the best discriminating variables chosen by Bayesian classification. These good predictors of teachers' country were variable 40 "It is less profitable to offer special education to children with difficulties than to gifted children" and variable 49 "It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade".

The Bayesian approach gives more detailed information on the most important discriminating variables between the teachers from two countries than the traditional discriminant analysis. However, we have shown that the most discriminating variables resemble each other in both analyses. Concerning our findings we can identify the variables with priorities in special education and special educational services for gifted as the most discriminating ones between the American and Finnish teachers.

Significance of the Study

Factor solutions as well as score differences demonstrated cultural differences with the scale used. It is possible that the longer presence of gifted programs in the USA has fostered better and sometimes different attitudes. The main cross-cultural differences between American and Finnish teachers were related to the negative side effects of

special classes and other special arrangements for the gifted outside the regular classroom. The earlier cross-cultural study that compared teacher attitudes toward gifted education in Finland and Britain showed the same tendency of Finnish teachers to be concerned about the social and affective development of highly able children in the special classes (Ojanen & Freeman 1994). Based on the results of this study, the Finnish teachers would need training that provides information and knowledge on the contents of special classes and programs for the gifted. Evidently, in the Finnish context the social and affective needs of gifted children should be emphasized in the desigh of special arrangements for highly able. In Finland as well as in the United States we want to educate the whole personality of the child; not only his/her academic achievement. In the context of gifted education this emphases should be acknowledged with both pre-service and in-service teachers.

Results of this study add to cross cultural studies which are rarely conducted in gifted education. In addition, new knowledge is contributed to the field of gifted education. This new knowledge includes more information about factors related to attitudes toward gifted children as well as information about instrumentation used for these studies. This knowledge can be used to promote training of all teachers, including pre-service teachers.

The new method used in analyzing the data predicts culture-dependent attitudes with 87.6 % accuracy. The findings of this study can be used in developing cross-culturally valid instruments in measuring teacher attitudes toward gifted education.

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Appendix 1. The Instrument

Directions: Please answer the following questions/items by circling the answers or filling in the blank, whichever is appropriate.

1. Male _____ Female _____
2. Year of birth: _____
3. Check one of the following:

   Elementary education _____

   Secondary education _____
4. Subjects I am/will be specialized in (two possibilities): _____

   _____
5. Subjects I have competence in: _____

   _____
6. Which of the following applies to you? Check all that apply.

   I am married. _____

   I have a family member who is gifted. _____

   I think I am gifted. _____

   I have taught or worked with gifted children. _____

   I am considered a gifted program teacher. _____

Attitudes Towards Giftedness

Directions: Indicate your agreement or disagreement using a five-point Likert scale **(1 = completely disagree, 2 = moderately disagree, 3 = undecided, 4 = moderately agree, 5 = completely agree).** Circle the appropriate number for each question below.

1. Talent is a rare commodity which we must encourage.	1	2	3	4	5
2. Devoting special funds to the education of gifted children constitutes a profitable investment in the future of our society.	1	2	3	4	5
3. Offering special help to the gifted helps perpetuate social inequalities.	1	2	3	4	5
4. Special services for the gifted constitute an injustice to other children.	1	2	3	4	5
5. Special programs for gifted children have the drawback of creating elitism.	1	2	3	4	5
6. Since we invest supplementary funds for children with difficulties, we should do the same for the gifted.	1	2	3	4	5
7. It is unfair to deprive gifted children of the enrichment which they need.	1	2	3	4	5
8. Children with difficulties have the most need of special educational services.	1	2	3	4	5
9. In our schools, it is not always possible for gifted children to fully develop their talents.	1	2	3	4	5
10. Our schools are already adequate in meeting the needs of the gifted.	1	2	3	4	5
11. Gifted children don't need special educational services.	1	2	3	4	5
12. The gifted are already favoured in our schools.	1	2	3	4	5
13. Whatever the school program, the gifted will succeed in any case.	1	2	3	4	5
14. Because of a lack of appropriate programs for them, the gifted of today may become the dropouts and delinquents of tomorrow.	1	2	3	4	5
15. The gifted waste their time in regular classes.	1	2	3	4	5
16. If the gifted are not sufficiently motivated in school, they may become lazy.	1	2	3	4	5
17. The gifted come mostly from wealthy families.	1	2	3	4	5
18. All children are gifted.	1	2	3	4	5
19. People are born gifted, you can't become gifted.	1	2	3	4	5
20. A greater number of gifted children should be allowed to skip a grade.	1	2	3	4	5
21. Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students.	1	2	3	4	5
22. Schools should allow gifted students to progress more rapidly.	1	2	3	4	5
23. Enriched school programs respond to the needs of gifted children better than skipping a grade.	1	2	3	4	5
24. An enriched school program can help gifted children to completely develop their abilities.	1	2	3	4	5

1=completely disagree, **2**=moderately disagree, **3**=undecided, **4**=moderately agree, **5**=completely agree

25. The best way to meet the needs of the gifted is to put them in special classes.	1	2	3	4	5
26. Most teachers do not have the time to give special attention to their gifted students.	1	2	3	4	5
27. By separating students into gifted and other groups, we increase the labelling of children as strong-weak, good-less good, etc.	1	2	3	4	5
28. Special programs for gifted children make them more motivated to learn	1	2	3	4	5
29. When the gifted are put in special classes, the other children feel devalued.	1	2	3	4	5
30. Often, gifted children are rejected because people are envious of them.	1	2	3	4	5
31. Gifted children might become vain or egotistical if they are given special attention.	1	2	3	4	5
32. The speed of learning in our schools is far too slow for the gifted.	1	2	3	4	5
33. I am sometimes uncomfortable before people I consider to be gifted.	1	2	3	4	5
34. Average children are the major resource of our society, so, they should be the focus of our attention.	1	2	3	4	5
35. We should give special attention to the gifted just as we give special attention to children with difficulties.	1	2	3	4	5
36. Some teachers are jealous of the talents their gifted students possess.	1	2	3	4	5
37. It isn't a compliment to be described as a "whiz kid".	1	2	3	4	5
38. The enrichment tract is a good means with which to meet certain special needs of gifted children.	1	2	3	4	5
39. The gifted need special attention in order to fully develop their talents.	1	2	3	4	5
40. It is less profitable to offer special education to children with difficulties than to gifted children.	1	2	3	4	5
41. Gifted students often disturb other students in the class.	1	2	3	4	5
42. The idea of offering special educational services to gifted children goes against the democratic principles of our society	1	2	3	4	5
43. Sooner or later, regular school programs may stifle the intellectual curiosity of certain gifted children.	1	2	3	4	5
44. We have a greater moral responsibility to give special help to children with difficulties than to gifted children.	1	2	3	4	5
45. In order to progress, a society must develop the talents of gifted individuals to a maximum.	1	2	3	4	5
46. Gifted children are often unsociable.	1	2	3	4	5
47. The gifted should spend their spare time helping those who progress less rapidly.	1	2	3	4	5
48. It is parents who have the major responsibility for helping gifted children develop their talents.	1	2	3	4	5

49. It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.	1	2	3	4	5
50. Equal opportunity in education does not mean having the same program for everyone, but rather programs adapted to the specific needs of each child.	1	2	3	4	5
51. Special educational services for the gifted are a mark of privilege.	1	2	3	4	5
52. Generally, teachers prefer to teach gifted children rather than those who have difficulties.	1	2	3	4	5
53. Some children are more gifted than others.	1	2	3	4	5
54. In our schools, it is possible to meet the educational needs of the gifted without investing additional resources.	1	2	3	4	5
55. A child who has been identified as gifted has more difficulty in making friends.	1	2	3	4	5
56. All children could be gifted if they benefited from a favourable environment.	1	2	3	4	5
57. When gifted children are put together in a special class most adapt badly to the fact that they are no longer at the head of the class.	1	2	3	4	5
58. Skipping a grade emphasizes scholastic knowledge too much.	1	2	3	4	5
59. Skipping a grade forces children to progress too rapidly.	1	2	3	4	5
60. There are no gifted children in our school	1	2	3	4	5

USA	Finland
Student Teachers	Student Teachers
Elementary = 27	Elementary = 44
Secondary = 52	Secondary = 0
Practicing Teachers	Practicing Teachers
Elementary = 27	Elementary = 39
Secondary = 14	Secondary = 9
Gifted Teachers	Gifted Teachers
Elementary = 27	Elementary = 17
Secondary = 12	Secondary = 32

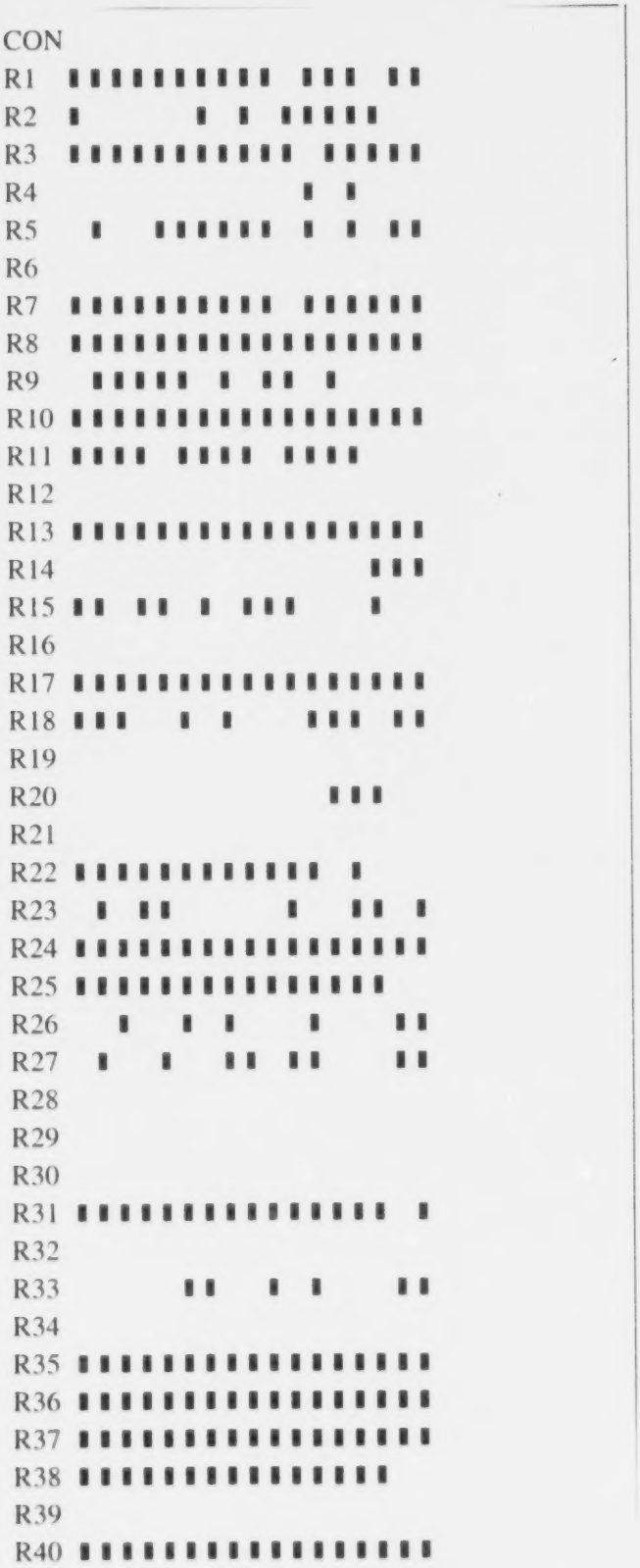
Table 1. Frequencies for Type of Teacher by Elementary and Secondary for USA and Finland (N = 300)

Factor	Items In Loading Order
1. Enrichment alternatives	38, 39, 28, 43, 7
2. Special needs of the gifted	6, 1, 35, 2, 16
3. Investment for gifted	32, 15, 28, 53, 50
4. Social problems	55, 46, 57
5. Acceleration	5, 58, 20, 21
6. Advantages of being gifted	13, 14, 52, 17
7. Special classes for the gifted	25, 40, 49
8. Everybody is gifted	18, 56
9. Equality of opportunities	4, 3, 5, 42, 51
10. Special services for gifted	60, 11
11. Current situation in schools	10, 9
12. Special programs for gifted	14, 43, 16, 28, 15, 39
13. Consequences of gifted education	37, 45, 2, 5
14. Future directions in gifted education	2, 47
15. Priorities in special education	44, 8
16. Rapid progress of the gifted	22, 36
17. Enrichment vs. acceleration	23, 21, 24, 20
18. Labeling	29, 27, 5, 31

Table 2. Factor Analysis Solution for 18 Factors

Factor			Wilks' Lambda	F	df1	df2	Sig.
REGR factor score	10 for analysis	1	.816	68.640	1	305	.000
REGR factor score	7 for analysis	1	.875	43.527	1	305	.000
REGR factor score	13 for analysis	1	.879	42.077	1	305	.000
REGR factor score	2 for analysis	1	.885	39.534	1	305	.000
REGR factor score	12 for analysis	1	.891	37.420	1	305	.000
REGR factor score	9 for analysis	1	.945	17.638	1	305	.000
REGR factor score	15 for analysis	1	.949	16.472	1	305	.000
REGR factor score	5 for analysis	1	.958	13.386	1	305	.000
REGR factor score	16 for analysis	1	.960	12.861	1	305	.000
REGR factor score	6 for analysis	1	.976	7.590	1	305	.006
REGR factor score	8 for analysis	1	.984	5.103	1	305	.025
REGR factor score	4 for analysis	1	.985	4.554	1	305	.034
REGR factor score	11 for analysis	1	.988	3.779	1	305	.053
REGR factor score	17 for analysis	1	.990	3.001	1	305	.084
REGR factor score	1 for analysis	1	.993	2.134	1	305	.145
REGR factor score	3 for analysis	1	.995	1.587	1	305	.209
REGR factor score	14 for analysis	1	.997	.859	1	305	.355
REGR factor score	18 for analysis	1	.998	.599	1	305	.440

Table 3. Test of Equality of Group Means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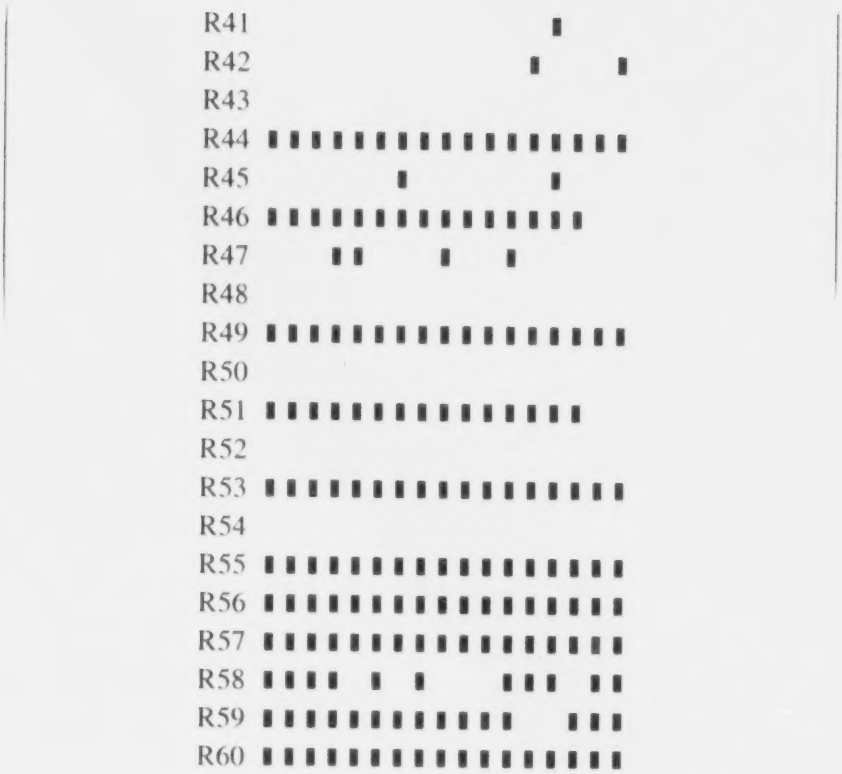

Figure 4. Variable subsets found by the automatic search. The most probable subset of variables (the selected one) is on the left.

R 6 Since we invest supplementary funds for children with difficulties, we should do the same for the gifted.
R 12 The gifted are already favoured in our schools.
R 16 If the gifted are not sufficiently motivated in school, they may become lazy.
R 19 People are born gifted, you can't become gifted.
R 21 Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students.
R 32 The speed of learning in our school is far too slow for the gifted.
R 34 Average children are the major resource of our society, so, they should be the focus of our attention.
R 39 The gifted need special attention in order to fully develop their talents.
R 43 Sooner or later regular school programs may stifle the intellectual curiosity of certain gifted children.
R 48 It is parents who have the major responsibility for helping gifted children develop their talents.
R 50 Equal opportunity in education does not mean having the same program.
R 52 Generally, teachers prefer to teach gifted children rather than those who have difficulties.
R 54 In our schools, it is possible to meet the educational needs of the gifted without investing additional resources.

Figure 5. Non-invariant variables selected in the Bayesian classification method.

R 8 Children with difficulties have the most need of special educational services.
R 13 Whatever the school program, the gifted will succeed in any case.
R 17 The gifted come mostly from wealthy families.
R 24 An enriched school program can help gifted children to completely develop their abilities.
R 35 We should give special attention to the gifted just as we give special attention to children with difficulties.
R 36 Some teachers are jealous of the talents their gifted students possess.
R 37 It isn't a compliment to be described as a "whiz kid".
R 40 It is less profitable to offer special education to children with difficulties than to gifted children.
R 44 We have a greater moral responsibility to give special help to children with difficulties than to gifted children.
R 49 It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.
R 53 Some children are more gifted than others.
R 55 A child who has been identified as gifted has more difficulty in making friends.
R 56 All children could be gifted if they benefited from a favourable environment.
R 57 When gifted children are put together in a special class most adapt badly to the fact that they are no longer at the head of the class.
R 60 There are no gifted children in our school.

Figure 6. Invariant variables selected by Bayesian method.

Cross-cultural predictors of teachers' attitudes toward gifted education

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A paper presented at the Annual Meeting of the American Educational Research Association in Montréal, Canada, April 1999.

Running head: CROSS-CULTURAL PREDICTORS OF TEACHERS' ATTITUDES TOWARD GIFTED EDUCATION

Objectives

The purpose of this study was to investigate the culture-dependent attitudes of teachers toward gifted education. The sample consisted of Finnish teachers (N=147) and American teachers (N=160). The teachers from both countries represented pre-service teachers, regular classroom teachers, and teachers of the gifted. The instrument used was the attitude scale toward gifted education developed by Gagne and Nadeau (1985). The relationship of attitude to demographic variables, such as age, gender, having a gifted family member and giftedness of respondents were examined. However, a special emphasis in this study was on the relationship of attitude to the culture from which the teacher came. The primary purpose of this study was to identify cross-cultural predictors of teachers' attitudes toward gifted education. In addition, a new method to find these predictors was introduced as an alternative methodological approach in prediction. Finally, the results of this study were compared to an earlier study using more traditional quantitative methods (Tirri, Tallent-Runnels & Adams 1998).

Perspective

In prior studies few variables have consistently emerged as substantial explanatory factors for attitudes toward and perceptions of gifted children and services for the gifted. Begin and Gagne (1994), in their analysis and summary of results of 30 studies with almost 50 variables, concluded that only three potentially valid predictors emerged. These were contact with gifted children, sex of the respondents, and teachers vs. parents.

However, methodological problems and much variation among studies prompted them to make several recommendations for future studies. Results from several other studies (e.g., Copenhaver & McIntyre 1992; Jones & Southern 1992; Morris 1987) demonstrated that those with more knowledge about gifted children hold more favorable attitudes toward them. Another factor that emerged from many studies is experience working with gifted children. In general, teachers who have worked with them have more positive attitudes toward them than teachers who have no experience teaching gifted children (Begin & Gagne 1994; Copenhaver & McIntyre 1992; Dettmer 1985; Townsend & Patrick 1993).

Some of the studies concerning attitude have been conducted in countries other than the United States (e.g., Awanbor 1991; Busse, Dahme, Wagner & Wieczerkowski 1986; Gagne 1983; Tirri & Uusikylä 1994; Ojanen & Freeman 1994, Tirri et al. 1998). Only three of these studies (Busse et al. 1986, Ojanen & Freeman 1994; and Tirri et al. 1998) were cross-cultural. The first one (Busse et al. 1986) compared samples from Germany and from the United States. This study examined teacher perceptions of characteristics of highly gifted students. There were some differences, with Germans focusing more on creativity and Americans focusing on intelligence as indicative of giftedness. The other cross-cultural study (Ojanen & Freeman 1994) examined the attitudes and experiences of headteachers, class-teachers, and highly-able students toward the education of the highly able in Finland and Britain. According to this study the British headteachers were more concerned than the Finns about the potential problems of their highly able students. The Finnish teachers preferred to keep highly able students within normal classroom routine

and with other children, in order to promote their social skills, and also to have them as good examples for the less talented students. They were afraid of the isolation which might occur should talented children be placed in special schools, something they all deplored. Instead, they preferred special arrangements within ordinary, mixed-ability classes and schools (Ojanen & Freeman 1994).

In the most recent cross-cultural study on teacher attitudes toward gifted education the Finnish teachers were shown to be more concerned about the negative side effects of special classes and other special arrangements for the gifted outside the regular classroom than their American colleagues (Tirri et al. 1998). In this paper our aim is to further explore those attitudes toward gifted education that are strongly culture-dependant.

Methods

Participants were from Finland (N=147) and the United States (N=160). These were regular classroom teachers, pre-service teachers, and gifted program teachers (see Table 1.) All groups included elementary and secondary teachers, several grade levels, several subject areas, and varying years of experience. The instrument utilized was Form A of the Attitudes Toward Giftedness scale developed by Gagne and Nadeau (1985). The scale contains 60 statements; the questionnaire uses a 5-point Likert-type scale (from Strongly agree to Strongly disagree). Procedures included administration of the instrument within college classes for preservice teachers. Other teachers were asked by school personnel to participate. All participation was anonymous and voluntary. Attached to the instrument

was a demographics sheet asking age, gender, subjects taught, grad level taught, if they were gifted, or if they had a gifted family member.

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insert Table 1 approximately here

Findings

Results of the First Factor Analyses

From the theoretical setting of the Gagne and Nadeau study (1985) we have two essential pieces of information. The first one is that the expected number of factors is five using maximum-likelihood factor analysis. After performing factor analysis in the same manner as Gagne and Nadeau (1985) we found the five factor solution to be unjustified for our sample. The five factor solution explained only 33% of the total variance, and the criteria of eigenvalues greater than 1 was not met with that number of factors. The second piece of information is that the existence of correlation between the latent variables influences our choice of rotation method for factor analysis. The use of varimax (orthogonal) method for rotation in the Gagne and Nadeau study (1985) has become a de facto standard in educational research. However, in many cases the use of oblique rotations could have produced significantly different results (Tirri 1993). This is not surprising if one realizes that in many cases the underlying dimensions are clearly correlated already because of the theoretical framework, and thus an orthogonal rotation will be able to find only artifacts; i.e., approximations to the true structures. In our case

the latent variables representing the various dimensions of attitudes toward gifted education are naturally all highly correlated, and thus to achieve the simplest interpretation structure the use of oblimin rotation (Harman, 1976, 334-341) is more appropriate than varimax solutions. Following Harman's recommendation (Harman 1976) we used direct oblimin rotation in our factor analysis.

Any exploratory analysis has to be preceded by observations relating to the appropriateness of its use. Consequently we have tested both the hypothesis that the correlation matrices in question are identity matrices (Bartlett's test of sphericity) and the relationships of observed correlation coefficients to the magnitudes of the partial correlation coefficients(the Kaiser-Meyer-Olkin measure). In both of these respects the correlation matrices seem to satisfy the requirements for factor analysis well. The Bartlett sphericity test value was 5450.6 with 0 significance level, and the KMO value was .78, a value which Kaiser (1974) characterizes as meritorious.

One of the central issues in exploratory factor analysis is the question of deciding the right number of factors; i.e., when to stop factoring. There exist formal tests such as Bartlett's test based on chi-square approximations (Bartlett 1950), but these tests only provide an upper bound for the number of factors that can be of practical significance. A statistical test of significance only indicates the existence of factors, but not necessarily ones that are identifiable in the semantic framework studied. In our case, the commonly used guideline of latent root curve criterion; i.e., the "scree" of Cattell (Cattell, 1978, 76-91) clearly underestimates the number of factors. Thus as a numeric guideline to choose the proper number of factors we have used the "variance greater than 1.0" rule (Kaiser,

1970, 401-415), which is the default in SPSS software. In general, the most important factor influencing the choices has been the simplicity of interpretation.

The chosen factor solution

The chosen 18-factor solution explained 62.3% of the total variance. The detailed description of the chosen factor solution is provided in (Tirri et al. 1998). Table 2 lists all 18 factors along with item numbers for each factor. Many of the factors in this solution are closely related. However, there are no justifiable criteria to force the number of factors to be smaller. This relationship is accounted for by using oblique rotation which allows the factors to correlate. It is also a property of oblique rotations that variables can get high loadings on several factors. You will notice that this did occur with our 18-factor solution.

MANOVA results for the demographic variables did not demonstrate any significant differences. However, the results with country (Finland, USA) and type of teacher (pre-service, regular classroom, gifted program) did suggest differences between cultures and among teacher types. For the 18 factors there was a significant effect for country [Wilks Lambda = .60, f (18,283) = 10.52, p = .0001]. Scores for 12 of the 18 factors demonstrated significant differences between teachers in Finland and those in the United States. These results of the univariate analyses are reported in details along with means and standard deviations for each in our earlier paper (Tirri et. al. 1998) There were no differences for factors 3, 5, 8, 11, 16 and 17.

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insert Table 2 approximately here

Discriminate Analysis Results

The descriptive statistics with means and standard deviations, an exploratory factor analysis and a Multivariate Analysis of Variance (MANOVA) are reported in details in our earlier paper (Tirri et al. 1998). The factor scores gained in the factor analysis were used to perform a discriminate analysis. This analysis helped to determine which of the significant differences or factors might be those which discriminate best between countries. Every 18 factor score represented the high loading variables of each factor. The classification results showed that country was a very good prediction of teachers' differences in their attitudes toward gifted education. The discriminate analysis classified 86.6% of original grouped cases correctly. The statistical indicators, such as Wilks's Lambda (Klecka 1981, 36-39), F-value and statistical significance of the group means showed that some of the factors discriminated the teachers from two countries better than the others (see Table 3.). The teachers differed most from each other in their attitudes toward "Special services for gifted" (factor 10). The American teachers were more favorable toward special services for gifted, and they acknowledged the differences between the children in schools. The Finnish teachers were more oriented toward "the same education for everybody" and they were not as ready as American teachers to label some of the children gifted. This result is very understandable, because gifted education has a longer tradition in the United States than in Finland. Only during the last 10 years

has Finland officially acknowledged the need to arrange special services for gifted and talented students (Tirri 1997).

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insert Table 3 approximately here

The second best discriminating factor between American and Finnish teachers was factor 7 "Special classes for gifted". The American teachers advocated special classes in efforts to meet the needs of gifted children. The Finnish teachers were more reserved in their attitudes toward special classes. The same attitude was found in the other study with Finnish teachers, in which the elementary teachers preferred differentiated methods within the regular classroom (Tirri & Uusikylä 1994).

"Consequences of gifted education" (factor 13) were shown to be of more concern to Finnish teachers than to their American colleagues. The Finnish teachers were more concerned about the negative consequences of special programs for gifted, and they were worried about the future effects of such arrangements. The American teachers, on the other hand, viewed the consequences of gifted education in a more positive light than their Finnish colleagues. However, in factor 2 "Special needs of Gifted", the Finnish teachers surprisingly acknowledged the special needs of gifted children more than the American teachers. The same trend was present with the issues dealing with "special programs for gifted" (factor 12). The Finnish teachers were more concerned about the dangers of gifted children becoming dropouts of tomorrow unless special programs are arranged for them. The American teachers were not that worried about the lack of special

programs for the gifted. This difference can be explained by the current debate in Finland over the importance of arranging special programs for gifted children. In the United States these programs have been available longer, and teachers might not be as worried about the lack of them as their Finnish colleagues.

The issues related to "Equality of opportunities" (factor 9) showed significant differences between the American and the Finnish teachers. In the Finnish society, the school system has traditionally looked most after the weakest members of the society, for example, the children with learning disabilities and behavioral problems. In this light it is natural that the Finnish teachers were more concerned about issues concerning equality in gifted education than their American colleagues. The same tendency for Finnish teachers to emphasize the needs of children with difficulties was seen in the differences of American and Finnish teachers toward issues on "Priorities in special education" (factor 15). The Finnish teachers were more in favor of special help for children with difficulties than for gifted children.

According to Van Tassell-Baska (1992) acceleration is the key issue that tests acceptance toward gifted education. In our data, American teachers favored acceleration options (factor 5) more than the Finnish teachers. This tendency was natural because of the lack of acceleration options we have had in Finland. However, today it is possible for the parents to decide if they want their child to start school in the age of 6 (earlier the age was 7).

The results of the Bayesian predictive discriminant analysis

In order to investigate the discriminating factors (variables) further, in this paper we have performed another classification analysis of teachers' attitudes with respect to predicting their country of origin. We have adopted a new BAYDA classification method based on Bayesian analysis (Silander & Tirri 1999). We will show that the Bayesian based method can predict the country of the teacher 87.6% of cases correctly. Our purpose is to find out more evidence for identifying those teacher attitudes that are the most culture-dependant. Since this Bayesian analysis is not as "standard" methodology as linear discriminant analysis, in addition to the analysis results we also provide some details of the analysis performed.

The task in the Bayesian analysis was to build a model for classifying the data items according to the class variable "COUNTRY" using approximately a half of the instrument variables as predictor variables. The chosen predictors were the same as in the linear discriminant analysis, i.e., the variables dealt mostly with acceleration and grouping that Van Tassell-Baska (1992) has identified as key issues testing acceptance toward gifted education. The analysis showed that using the selected predictor variables one can estimate a 87.6 % success rate in the classifications. In BAYDA this estimation is based on the following external leave-one-out crossvalidation procedure: Using the selected predictor variables, BAYDA built 307 models. Each of these models were constructed using 306 data items from the data set and each model was then used to classify the data item *not used* in the model's construction. Since 269 out of 307 models succeeded in classifying the one unseen data item correctly, one may assume that this

would happen in the future as well. However, simply stating the classification performance of 87.6% is not meaningful as such. It has to be compared with the performance obtainable by a "default" classification procedure that always guesses the class of the data item to be the class of the majority (class "1" in this case). In our sample this simple method would yield the performance rate of 52.1%.

The overall result of 87.6% is just an average performance rate. Suppose our model classifies a certain data item to belong to the class "1". Does this mean that there is an 87.6% chance that this classification is right? Not necessarily, since some classifications may be correct more often than the others. In this case, while doing the crossvalidation, we predicted 164 times that data item should belong to the class "1" and 87.2% of these classifications were correct. So we estimate that if the system predicts previously unseen data item to belong to the class "1", there is an 87.2% chance that this prediction is right. The reliability of this estimate can be rated by stating the fact that the estimate is based on classifying 164 items (53% of the sample) as members of the class "1".

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insert Figure 4 approximately here

In the classification process the automatic search tried to find the best set of variables that predict the country. This procedure is akin to the stepwise selection procedure in the discriminant analysis. In Figure 4 can be seen the variable subsets found by the automatic search. The variables that were not selected for any subset are not good ones to predict cross-cultural attitudes in our data. These variables are presented in Figure 5.

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insert Figure 5 approximately here

However, as we observe, some of the variables were selected for every subset. In some sense this provides confidence to the credibility of these particular variables, as frequent presence in well-predicting subsets supports a particular type of invariance that can be interpreted as an indicator for importance. Figure 6 illustrates these invariant predictors of teacher attitudes.

If we compare the variables that were selected for every subset by the BAYDA-classification with the high loading variables in the factor analysis, we can identify some similarities in the analysis. The high loading variables in factor 15 "Priorities in special education" included variable 8 "Children with difficulties have the most need of special educational services" and variable 44 "We have a greater moral responsibility to give special help to children with difficulties than to gifted children". In the discriminant analysis factor 15 was shown to be one of the most discriminating factor between American and Finnish teachers. Both these variables with high loadings on factor 15 were also selected as the most predicting ones for the country of the teacher according to the Bayesian classification.

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insert Figure 6 approximately here

The variable 60 "There are no gifted children in our school" with high loading in factor 10 "Special services for gifted" was one of the most predicting variable also in the Bayesian classification. Factor 7 "Special classes for the gifted" was the second best discriminating factor between American and Finnish teachers. Two of these three high loading variables in this factor were also among the best discriminating variables chosen by Bayesian classification. These good predictors of teachers' country were variable 40 "It is less profitable to offer special education to children with difficulties than to gifted children" and variable 49 "It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade".

The Bayesian approach gives more detailed information on the most important discriminating variables between the teachers from two countries than the traditional discriminant analysis. However, we have shown that the most discriminating variables resemble each other in both analyses. Concerning our findings we can identify the variables with priorities in special education and special educational services for gifted as the most discriminating ones between the American and Finnish teachers.

Significance of the Study

Factor solutions as well as score differences demonstrated cultural differences with the scale used. It is possible that the longer presence of gifted programs in the USA has fostered better and sometimes different attitudes. The main cross-cultural differences between American and Finnish teachers were related to the negative side effects of

special classes and other special arrangements for the gifted outside the regular classroom. The earlier cross-cultural study that compared teacher attitudes toward gifted education in Finland and Britain showed the same tendency of Finnish teachers to be concerned about the social and affective development of highly able children in the special classes (Ojanen & Freeman 1994). Based on the results of this study, the Finnish teachers would need training that provides information and knowledge on the contents of special classes and programs for the gifted. Evidently, in the Finnish context the social and affective needs of gifted children should be emphasized in the desigh of special arrangements for highly able. In Finland as well as in the United States we want to educate the whole personality of the child; not only his/her academic achievement. In the context of gifted education this emphases should be acknowledged with both pre-service and in-service teachers.

Results of this study add to cross cultural studies which are rarely conducted in gifted education. In addition, new knowledge is contributed to the field of gifted education. This new knowledge includes more information about factors related to attitudes toward gifted children as well as information about instrumentation used for these studies. This knowledge can be used to promote training of all teachers, including pre-service teachers.

The new method used in analyzing the data predicts culture-dependent attitudes with 87.6 % accuracy. The findings of this study can be used in developing cross-culturally valid instruments in measuring teacher attitudes toward gifted education.

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Appendix 1. The Instrument

Directions: Please answer the following questions/items by circling the answers or filling in the blank, whichever is appropriate.

1. Male _____ Female _____
2. Year of birth: _____
3. Check one of the following:

   Elementary education _____

   Secondary education _____
4. Subjects I am/will be specialized in (two possibilities): _____

   _____
5. Subjects I have competence in: _____

   _____
6. Which of the following applies to you? Check all that apply.

   I am married. _____

   I have a family member who is gifted. _____

   I think I am gifted. _____

   I have taught or worked with gifted children. _____

   I am considered a gifted program teacher. _____

Attitudes Towards Giftedness

Directions: Indicate your agreement or disagreement using a five-point Likert scale **(1 = completely disagree, 2 = moderately disagree, 3 = undecided, 4 = moderately agree, 5 = completely agree).** Circle the appropriate number for each question below.

1. Talent is a rare commodity which we must encourage.	1	2	3	4	5
2. Devoting special funds to the education of gifted children constitutes a profitable investment in the future of our society.	1	2	3	4	5
3. Offering special help to the gifted helps perpetuate social inequalities.	1	2	3	4	5
4. Special services for the gifted constitute an injustice to other children.	1	2	3	4	5
5. Special programs for gifted children have the drawback of creating elitism.	1	2	3	4	5
6. Since we invest supplementary funds for children with difficulties, we should do the same for the gifted.	1	2	3	4	5
7. It is unfair to deprive gifted children of the enrichment which they need.	1	2	3	4	5
8. Children with difficulties have the most need of special educational services.	1	2	3	4	5
9. In our schools, it is not always possible for gifted children to fully develop their talents.	1	2	3	4	5
10. Our schools are already adequate in meeting the needs of the gifted.	1	2	3	4	5
11. Gifted children don't need special educational services.	1	2	3	4	5
12. The gifted are already favoured in our schools.	1	2	3	4	5
13. Whatever the school program, the gifted will succeed in any case.	1	2	3	4	5
14. Because of a lack of appropriate programs for them, the gifted of today may become the dropouts and delinquents of tomorrow.	1	2	3	4	5
15. The gifted waste their time in regular classes.	1	2	3	4	5
16. If the gifted are not sufficiently motivated in school, they may become lazy.	1	2	3	4	5
17. The gifted come mostly from wealthy families.	1	2	3	4	5
18. All children are gifted.	1	2	3	4	5
19. People are born gifted, you can't become gifted.	1	2	3	4	5
20. A greater number of gifted children should be allowed to skip a grade.	1	2	3	4	5
21. Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students.	1	2	3	4	5
22. Schools should allow gifted students to progress more rapidly.	1	2	3	4	5
23. Enriched school programs respond to the needs of gifted children better than skipping a grade.	1	2	3	4	5
24. An enriched school program can help gifted children to completely develop their abilities.	1	2	3	4	5

1=completely disagree, **2**=moderately disagree, **3**=undecided, **4**=moderately agree, **5**=completely agree

25. The best way to meet the needs of the gifted is to put them in special classes.	1	2	3	4	5
26. Most teachers do not have the time to give special attention to their gifted students.	1	2	3	4	5
27. By separating students into gifted and other groups, we increase the labelling of children as strong-weak, good-less good, etc.	1	2	3	4	5
28. Special programs for gifted children make them more motivated to learn	1	2	3	4	5
29. When the gifted are put in special classes, the other children feel devalued.	1	2	3	4	5
30. Often, gifted children are rejected because people are envious of them.	1	2	3	4	5
31. Gifted children might become vain or egotistical if they are given special attention.	1	2	3	4	5
32. The speed of learning in our schools is far too slow for the gifted.	1	2	3	4	5
33. I am sometimes uncomfortable before people I consider to be gifted.	1	2	3	4	5
34. Average children are the major resource of our society, so, they should be the focus of our attention.	1	2	3	4	5
35. We should give special attention to the gifted just as we give special attention to children with difficulties.	1	2	3	4	5
36. Some teachers are jealous of the talents their gifted students possess.	1	2	3	4	5
37. It isn't a compliment to be described as a "whiz kid".	1	2	3	4	5
38. The enrichment tract is a good means with which to meet certain special needs of gifted children.	1	2	3	4	5
39. The gifted need special attention in order to fully develop their talents.	1	2	3	4	5
40. It is less profitable to offer special education to children with difficulties than to gifted children.	1	2	3	4	5
41. Gifted students often disturb other students in the class.	1	2	3	4	5
42. The idea of offering special educational services to gifted children goes against the democratic principles of our society	1	2	3	4	5
43. Sooner or later, regular school programs may stifle the intellectual curiosity of certain gifted children.	1	2	3	4	5
44. We have a greater moral responsibility to give special help to children with difficulties than to gifted children.	1	2	3	4	5
45. In order to progress, a society must develop the talents of gifted individuals to a maximum.	1	2	3	4	5
46. Gifted children are often unsociable.	1	2	3	4	5
47. The gifted should spend their spare time helping those who progress less rapidly.	1	2	3	4	5
48. It is parents who have the major responsibility for helping gifted children develop their talents.	1	2	3	4	5

49. It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.	1	2	3	4	5
50. Equal opportunity in education does not mean having the same program for everyone, but rather programs adapted to the specific needs of each child.	1	2	3	4	5
51. Special educational services for the gifted are a mark of privilege.	1	2	3	4	5
52. Generally, teachers prefer to teach gifted children rather than those who have difficulties.	1	2	3	4	5
53. Some children are more gifted than others.	1	2	3	4	5
54. In our schools, it is possible to meet the educational needs of the gifted without investing additional resources.	1	2	3	4	5
55. A child who has been identified as gifted has more difficulty in making friends.	1	2	3	4	5
56. All children could be gifted if they benefited from a favourable environment.	1	2	3	4	5
57. When gifted children are put together in a special class most adapt badly to the fact that they are no longer at the head of the class.	1	2	3	4	5
58. Skipping a grade emphasizes scholastic knowledge too much.	1	2	3	4	5
59. Skipping a grade forces children to progress too rapidly.	1	2	3	4	5
60. There are no gifted children in our school	1	2	3	4	5

USA	Finland
Student Teachers	Student Teachers
Elementary = 27	Elementary = 44
Secondary = 52	Secondary = 0
Practicing Teachers	Practicing Teachers
Elementary = 27	Elementary = 39
Secondary = 14	Secondary = 9
Gifted Teachers	Gifted Teachers
Elementary = 27	Elementary = 17
Secondary = 12	Secondary = 32

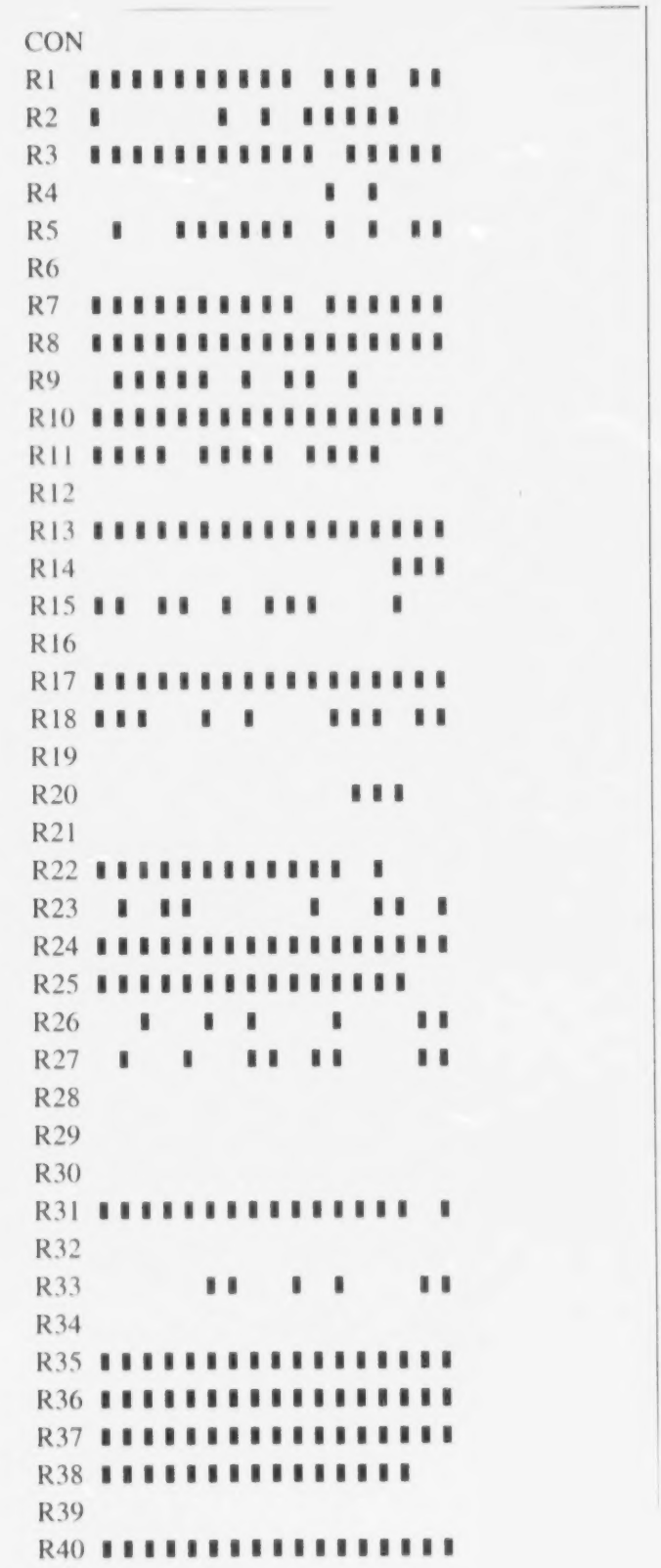
Table 1. Frequencies for Type of Teacher by Elementary and Secondary for USA and Finland (N = 300)

Factor	Items In Loading Order
1. Enrichment alternatives	38, 39, 28, 43, 7
2. Special needs of the gifted	6, 1, 35, 2, 16
3. Investment for gifted	32, 15, 28, 53, 50
4. Social problems	55, 46, 57
5. Acceleration	5, 58, 20, 21
6. Advantages of being gifted	13, 14, 52, 17
7. Special classes for the gifted	25, 40, 49
8. Everybody is gifted	18, 56
9. Equality of opportunities	4, 3, 5, 42, 51
10. Special services for gifted	60, 11
11. Current situation in schools	10, 9
12. Special programs for gifted	14, 43, 16, 28, 15, 39
13. Consequences of gifted education	37, 45, 2, 5
14. Future directions in gifted education	2, 47
15. Priorities in special education	44, 8
16. Rapid progress of the gifted	22, 36
17. Enrichment vs. acceleration	23, 21, 24, 20
18. Labeling	29, 27, 5, 31

Table 2. Factor Analysis Solution for 18 Factors

Factor			Wilks' Lambda	F	df1	df2	Sig.
REGR factor score	10 for analysis	1	.816	68.640	1	305	.000
REGR factor score	7 for analysis	1	.875	43.527	1	305	.000
REGR factor score	13 for analysis	1	.879	42.077	1	305	.000
REGR factor score	2 for analysis	1	.885	39.534	1	305	.000
REGR factor score	12 for analysis	1	.891	37.420	1	305	.000
REGR factor score	9 for analysis	1	.945	17.638	1	305	.000
REGR factor score	15 for analysis	1	.949	16.472	1	305	.000
REGR factor score	5 for analysis	1	.958	13.386	1	305	.000
REGR factor score	16 for analysis	1	.960	12.861	1	305	.000
REGR factor score	6 for analysis	1	.976	7.590	1	305	.006
REGR factor score	8 for analysis	1	.984	5.103	1	305	.025
REGR factor score	4 for analysis	1	.985	4.554	1	305	.034
REGR factor score	11 for analysis	1	.988	3.779	1	305	.053
REGR factor score	17 for analysis	1	.990	3.001	1	305	.084
REGR factor score	1 for analysis	1	.993	2.134	1	305	.145
REGR factor score	3 for analysis	1	.995	1.587	1	305	.209
REGR factor score	14 for analysis	1	.997	.859	1	305	.355
REGR factor score	18 for analysis	1	.998	.599	1	305	.440

Table 3. Test of Equality of Group Means


CON
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
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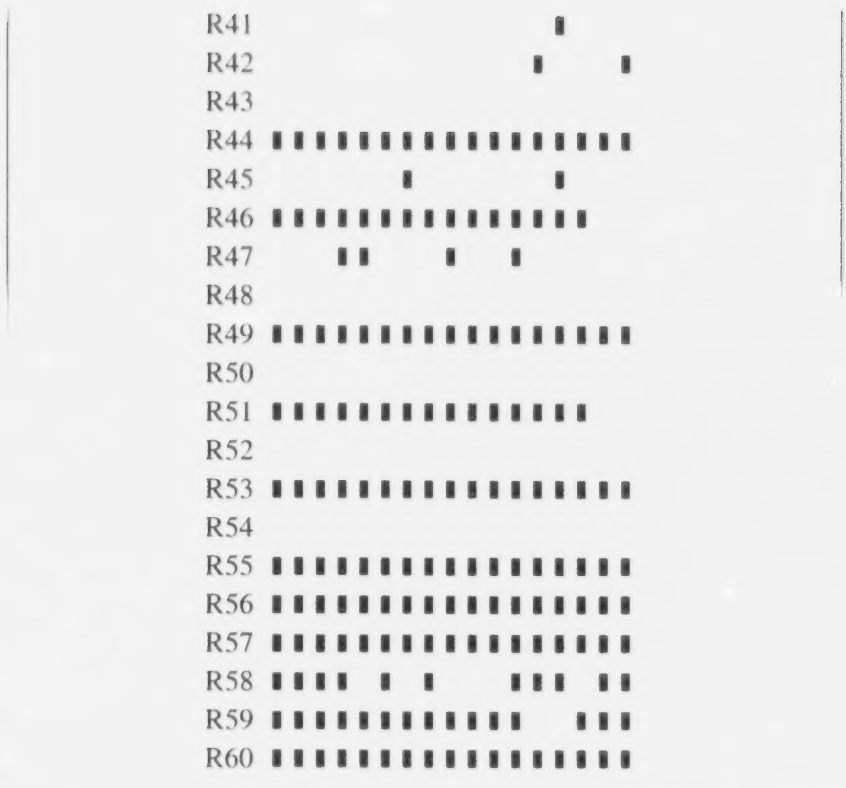

Figure 4. Variable subsets found by the automatic search. The most probable subset of variables (the selected one) is on the left.

R 6 Since we invest supplementary funds for children with difficulties, we should do the same for the gifted.
R 12 The gifted are already favoured in our schools.
R 16 If the gifted are not sufficiently motivated in school, they may become lazy.
R 19 People are born gifted, you can't become gifted.
R 21 Most gifted children who skip a grade have difficulties in their social adjustment to a group of older students.
R 32 The speed of learning in our school is far too slow for the gifted.
R 34 Average children are the major resource of our society, so, they should be the focus of our attention.
R 39 The gifted need special attention in order to fully develop their talents.
R 43 Sooner or later regular school programs may stifle the intellectual curiosity of certain gifted children.
R 48 It is parents who have the major responsibility for helping gifted children develop their talents.
R 50 Equal opportunity in education does not mean having the same program.
R 52 Generally, teachers prefer to teach gifted children rather than those who have difficulties.
R 54 In our schools, it is possible to meet the educational needs of the gifted without investing additional resources.

Figure 5. Non-invariant variables selected in the Bayesian classification method.

R 8 Children with difficulties have the most need of special educational services.
R 13 Whatever the school program, the gifted will succeed in any case.
R 17 The gifted come mostly from wealthy families.
R 24 An enriched school program can help gifted children to completely develop their abilities.
R 35 We should give special attention to the gifted just as we give special attention to children with difficulties.
R 36 Some teachers are jealous of the talents their gifted students possess.
R 37 It isn't a compliment to be described as a "whiz kid".
R 40 It is less profitable to offer special education to children with difficulties than to gifted children.
R 44 We have a greater moral responsibility to give special help to children with difficulties than to gifted children.
R 49 It is more damaging for a gifted child to waste time in class than to adapt to skipping a grade.
R 53 Some children are more gifted than others.
R 55 A child who has been identified as gifted has more difficulty in making friends.
R 56 All children could be gifted if they benefited from a favourable environment.
R 57 When gifted children are put together in a special class most adapt badly to the fact that they are no longer at the head of the class.
R 60 There are no gifted children in our school.

Figure 6. Invariant variables selected by Bayesian method.

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